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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/739,203	12/19/2003	Dong-Jin Park	SEC.907D	9872

20987 7590 06/26/2006

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EXAMINER

WEBB, GREGORY E

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/739,203

Applicant(s)

PARK ET AL.

Examiner

Gregory E. Webb

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0406;0705;1203
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 23-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Chon, Sang-mun (US6274537).

Concerning the method of removing resist, attack inhibitor, claimed contaminant, alkanamide, alkanolamine of claim 41 and the propane amide, Chon, Sang-mun teaches the following:

A resist removing agent and a resist removing composition, having an excellent capability for removing a resist and **polymer** and which does not attack underlying layers, a method for preparing the same and a resist removing method

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using the same. The resist removing agent includes alkoxy N-hydroxyalkyl **alkanamide**. The resist removing composition includes alkoxy N-hydroxyalkyl **alkanamide**, and at least one compound selected from a group consisting of a polar material having a dipole moment of 3 or greater, an **attack inhibitor** and **alkanolamine**. A substrate having the resist thereon is brought into contact with the resist removing agent or resist removing composition to **remove** the resist. (*emphasis added*)

Concerning the alkoxy N-hydroxyalkyl alkanamide, Chon, Sang-mun teaches the following:

To achieve the fourth objective, there is provided a method for removing resist including providing a substrate, forming a resist on the substrate, contacting the substrate with a resist removing agent comprising alkoxy N-hydroxyalkyl alkanamide or a resist removing composition to remove the resist from the substrate, the resist removing composition comprising **alkoxy N-hydroxyalkyl alkanamide**, and at least one compound selected from the group consisting of a polar material having a dipole moment of 3 or greater, an attack inhibitor, and alkanolamine. (*emphasis added*)

Concerning the hydroxylamine and the preferred corrosion inhibitor, Chon, Sang-mun teaches the following:

The good state is the state similar to using the conventional resist removing composition EKC-245, the better state is the improved state compared to the conventional case, and the best state is the significantly improved state compared to the conventional case, respectively. EKC-245 is a conventional resist removing composition having **hydroxylamine**, diglycolamine, **catechol** and water as its essential components. (*emphasis added*)

Concerning the claimed polar material and the dimethyl sulfoxide, Chon, Sang-mun teaches the following:

The polar material having a dipole moment of 3 or greater exhibits a high solubility with respect to crosslinked polymer and resist. In other words, the polymer strongly bonded on the side walls of the resist pattern and the surface of the exposed underlying layer can be effectively removed by such polar material. Also, resist removal itself is facilitated by such polar material. For the polar material having a dipole moment of 3 or greater, **water**, **methanol** or **dimethyl sulfoxide** may be employed. (*emphasis added*)

Claims 23-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Chon, Sang-Mun (US20010049346).

Concerning the method of removing resist, alkoxy N-hydroxyalkyl alkanamide, attack inhibitor,

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claimed contaminant, alkanamide, alkanolamine of claim 41 and the propane amide, Chon, Sang-Mun teaches the following:

A resist removing agent and a resist removing composition, having an excellent capability for removing a resist and **polymer** and which does not attack underlying layers, a method for preparing the same and a resist removing method using the same. The resist removing agent includes alkoxy N-hydroxyalkyl **alkanamide**. The resist removing composition includes **alkoxy N-hydroxyalkyl alkanamide**, and at least one compound selected from a group consisting of a polar material having a dipole moment of 3 or greater, an **attack inhibitor** and **alkanolamine**. A substrate having the resist thereon is brought into contact with the resist removing agent or resist removing composition to **remove** the resist.

(emphasis added)

Concerning the hydroxylamine and the preferred corrosion inhibitor, Chon, Sang-Mun teaches the following:

[0097] The good state is the state similar to using the conventional resist removing composition EKC-245, the better state is the improved state compared to the conventional case, and the best state is the significantly improved state compared to the conventional case, respectively. EKC-245 is a conventional resist removing composition having **hydroxylamine**, diglycolamine, **catechol** and water as its essential components. *(emphasis added)*

Concerning the claimed polar material and the dimethyl sulfoxide, Chon, Sang-Mun teaches the following:

[0042] The polar material having a dipole moment of 3 or greater exhibits a high solubility with respect to cross-linked polymer and resist. In other words, the polymer strongly bonded on the side walls of the resist pattern and the surface of the exposed underlying layer can be effectively removed by such polar material. Also, resist removal itself is facilitated by such polar material. For the polar material having a dipole moment of 3 or greater, **water**, **methanol** or **dimethyl sulfoxide** may be employed. *(emphasis added)*

Concerning the methoxy N-hydroxyethyl propane amide, Chon, Sang-Mun teaches the following:

5. The resist removing composition according to claim 4, wherein the alkoxy N-hydroxyalkyl alkanamide is of the formula (I): **R.sub.4--O--R.sub.3--CO--N--R.sub.1R.sub.2OH** (I) wherein: R.sub.1 is hydrogen, a C.sub.1 to C.sub.5 hydrocarbon, or an aromatic hydrocarbon having 1 to 3 rings, R.sub.2 is a C.sub.1 to C.sub.5 hydrocarbon or an aromatic hydrocarbon having 1 to 3 rings, and R.sub.3 and R.sub.4 are, independently, a C.sub.1 to C.sub.5 hydrocarbon. *(emphasis added)*

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Claims 23-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Chon, Sang-mun (US6398874).

Concerning the method of removing resist, attack inhibitor, claimed contaminant, alkanamide, alkanolamine of claim 41 and the propane amide, Chon, Sang-mun teaches the following:

A resist removing agent and a resist removing composition, having an excellent capability for removing a resist and **polymer** and which does not attack underlying layers, a method for preparing the same and a resist removing method using the same. The resist removing agent includes alkoxy N-hydroxyalkyl **alkanamide**. The resist removing composition includes alkoxy N-hydroxyalkyl **alkanamide**, and at least one compound selected from a group consisting of a polar material having a dipole moment of 3 or greater, an **attack inhibitor** and **alkanolamine**. A substrate having the resist thereon is brought into contact with the resist removing agent or resist removing composition to **remove** the resist.

(emphasis added)

Concerning the alkoxy N-hydroxyalkyl alkanamide, Chon, Sang-mun teaches the following:

To achieve the fourth objective, there is provided a method for removing resist including providing a substrate, forming a resist on the substrate, contacting the substrate with a resist removing agent comprising alkoxy N-hydroxyalkyl alkanamide or a resist removing composition to remove the resist from the substrate, the resist removing composition comprising **alkoxy N-hydroxyalkyl alkanamide**, and at least one compound selected from the group consisting of a polar material having a dipole moment of 3 or greater, an attack inhibitor, and alkanolamine. *(emphasis added)*

Concerning the hydroxylamine and the preferred corrosion inhibitor, Chon, Sang-mun teaches the following:

The good state is the state similar to using the conventional resist removing composition EKC-245, the better state is the improved state compared to the conventional case, and the best state is the significantly improved state compared to the conventional case, respectively. EKC-245 is a conventional resist removing composition having **hydroxylamine**, diglycolamine, **catechol** and water as its essential components. *(emphasis added)*

Concerning the claimed polar material and the dimethyl sulfoxide, Chon, Sang-mun teaches the following:

The polar material having a dipole moment of 3 or greater exhibits a high solubility with respect to cross-linked polymer and resist. In other words, the polymer strongly bonded on the side walls of the resist pattern and the surface of the exposed underlying layer can be effectively removed by such polar material. Also, resist removal itself is facilitated by such polar material. For the polar material having a dipole moment of 3 or greater, **water**, **methanol** or **dimethyl sulfoxide** may be employed. *(emphasis added)*

Claims 23-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Claims XXX are anticipated by Chon, Sang-mun (US6508887).

Concerning the method of removing resist, Chon, Sang-mun teaches the following:

In particular, an important issue in the **resist removing process** is to completely **remove** resist and etching residues from the surface of a substrate as fast as possible while not attacking underlying layers. In general, the **resist removing process** is carried out by a combination of dry **stripping**, e.g., ashing, and wet **stripping** using an organic **stripper**. The wet **stripping** is for removing impurities such as remaining resist which is not completely **removed** during the ashing and/or residues generated during etching and ashing for forming interconnection patterns or contact (via) holes from the surface of an integrated circuit substrate. The residues to be **removed** include organic polymer produced by reaction of plasma and components constituting the resist pattern, such as carbon (C), hydrogen (H), or oxygen (O), organometallic polymer produced when interconnection materials are back-sputtered to side walls of the resist pattern and a contact or via hole during an etching or ashing step, insulating materials or metal oxide formed when an insulation layer under the interconnection pattern is over-etched and then back-sputtered. (*emphasis added*)

Concerning the alkoxy N-hydroxyalkyl alkanamide, attack inhibitor, alkanamide and the propane amide, Chon, Sang-mun teaches the following:

contacting the substrate with a resist removing composition and removing the resist layer, the resist removing composition comprising an alkoxy N-hydroxyalkyl **alkanamide**, at least one selected from the group consisting of alkanolamine, a polar material having a dipole moment of 3 or greater and an **attack inhibitor**, and at least one of a fluoride-based reducing agent and a hydroxide-based reducing agent, or the resist removing composition comprising **alkoxy N-hydroxyalkyl alkanamide**, at least one selected from the group consisting of alkanolamine, a polar material having a dipole moment of 3 or greater and an **attack inhibitor**, and hydrogen peroxide. (*emphasis added*)

Concerning the hydroxylamine, Chon, Sang-mun teaches the following:

The observations are characterized by the relative amounts of remaining polymer, organometallic polymer, metal oxide and resist, and the good state (indicated by symbol .smallcircle.) is the similar state as that in the case of using the conventional resist removing composition EKC-245, the better state (indicated by symbol .circleincircle.) is the improved state, compared to the conventional case, and the best state (indicated by symbol .) is the significantly improved state, compared to the conventional case, respectively. EKC-245 is a conventional resist

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removing composition having **hydroxylamine**, diglycolamine, catechol and water as its essential components. (*emphasis added*)

Concerning the claimed polar material and the dimethyl sulfoxide, Chon, Sang-mun teaches the following:

Suitable polar materials having a dipole moment of 3 or greater include **water**, **methanol** or **dimethyl sulfoxide**. (*emphasis added*)

Concerning the preferred corrosion inhibitor, claimed contaminant and the alkanolamine of claim 41, Chon, Sang-mun teaches the following:

The organometallic **polymer** reduced as in the reaction formula (1) reacts with alkoxy N-hydroxyalkyl alkanamide, **alkanolamine** and the attack inhibitor, as represented in the following reaction formulas (2), (3) and (4), respectively. Reaction formulas (3) and (4) show examples in cases when the organometallic **polymer** reacts with mono**alkanolamine** as an example of **alkanolamine** and **catechol** as an example of the attack inhibitor, respectively. (*emphasis added*)

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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2. Claims 23-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 27-38 of U.S. Patent No. 6508887. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and the patent teach removing photoresists using the alkoxy N-hydroxyalkyl alkanamide.
3. Claims 23-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 6398874. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and the patent teach removing photoresists using the alkoxy N-hydroxyalkyl alkanamide.
4. Claims 23-41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-21 of U.S. Patent No. 7037852. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the application and the patent teach removing photoresists using the alkoxy N-hydroxyalkyl alkanamide.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to be 'G. Webb', with a stylized flourish at the end.

Gregory E. Webb
Primary Examiner
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gew